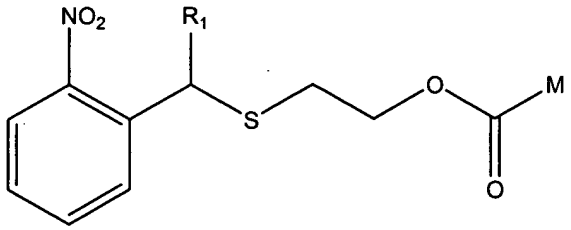
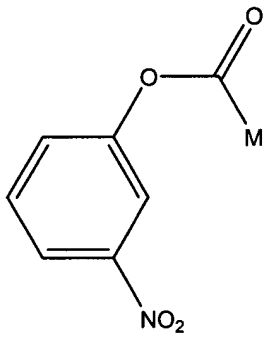
AMENDMENTS TO THE CLAIMS

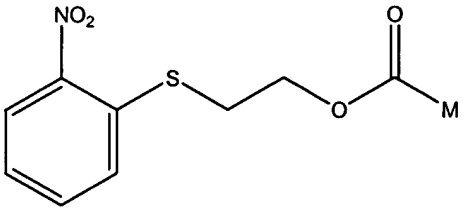
1. (Currently Amended) A compound represented by [[the]] a formula selected from the group consisting of: ~~M-Y,~~



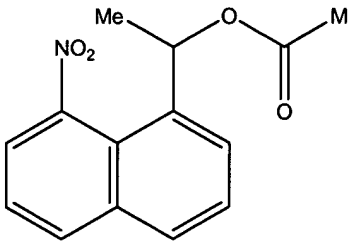
,



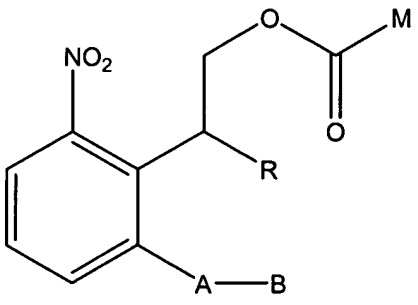
,



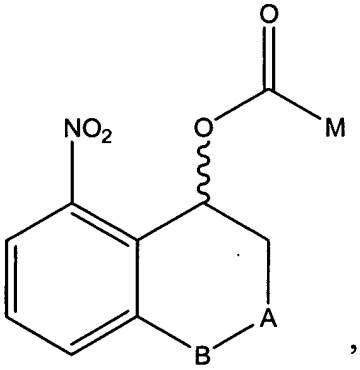
,



,



, and



,

---

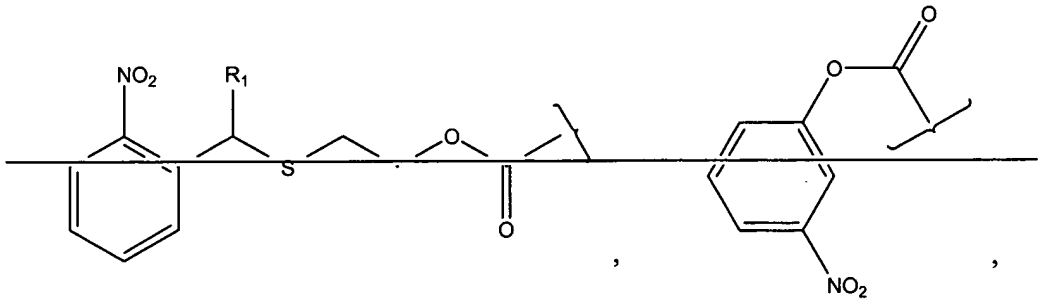
wherein the aromatic ring is optionally substituted with an alkoxy group or a

methylenedioxy group; and

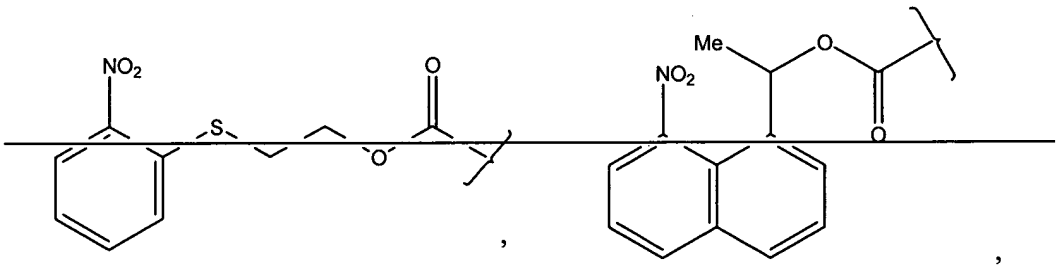
wherein:

M is a monomeric building block, a solid surface or a gel ~~having a reactive site that is masked by Y~~; and

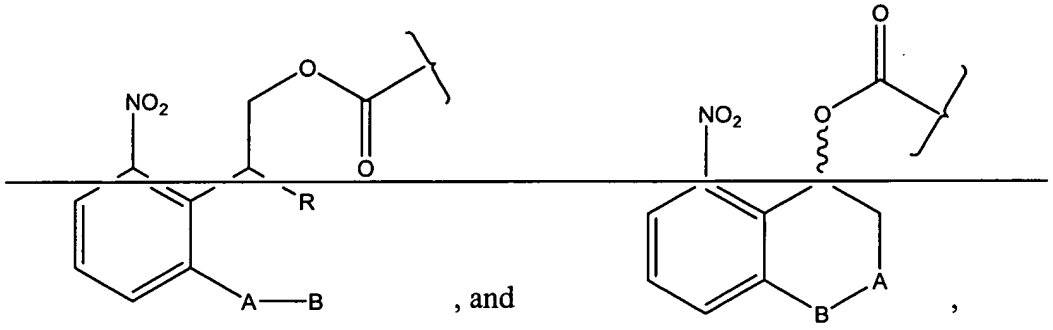
~~Y is a photolabile protecting group selected from the group consisting of:~~



,



,



, and

,

~~wherein:~~

~~the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;~~

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

B is an aprotic, weakly basic group;

R and R_1 are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, and optionally substituted aryl group, or an optionally substituted heteroaromatic group, and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm.

2. (Previously Presented) The compound of Claim 1, wherein M is selected from the group consisting of an amino acid, a peptide, nucleoside, polynucleotide or analogs thereof, a monosaccharide and a protein.

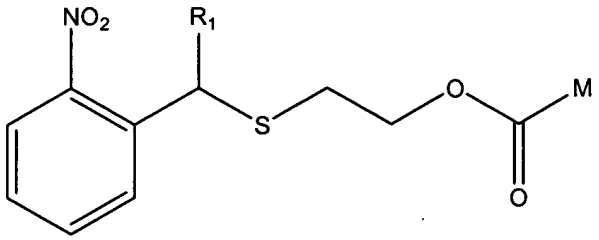
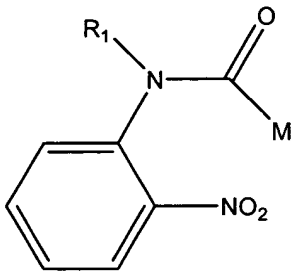
3. (Previously Presented) The compound of Claim 2, wherein M is a base-protected deoxynucleoside, wherein the deoxynucleoside is a deoxyadenosine, a deoxycytidine, a thymidine or a deoxyguanosine.

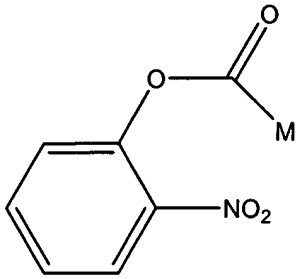
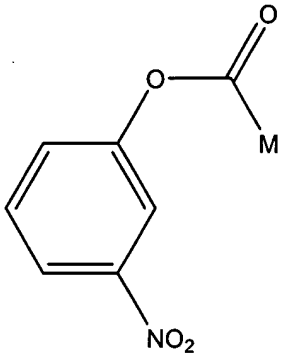
4. (Previously Presented) The compound of Claim 3, wherein M is selected from the group consisting of base protected deoxynucleoside H-phosphonates and base protected deoxynucleoside phosphoramidites.

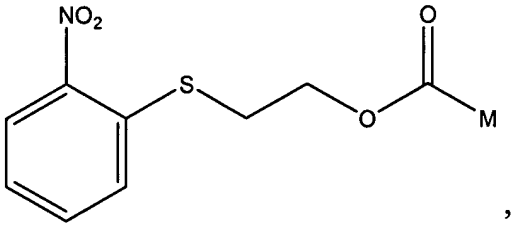
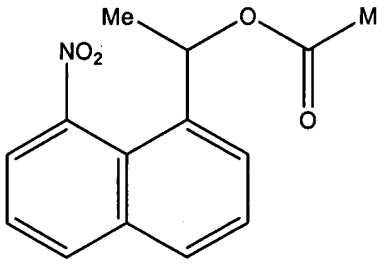
5. (Currently Amended) A method of attaching a molecule with a reactive site to a support comprising the steps of:

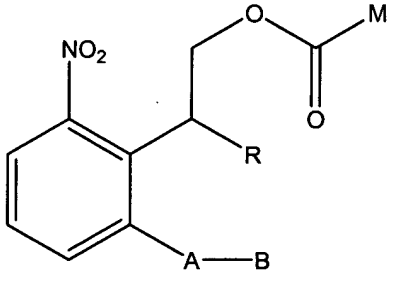
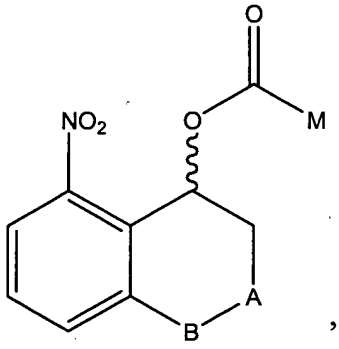
(a) providing a support with a reactive site;

(b) binding a first molecule represented by [[the]] a formula selected from the group consisting of ~~M_1-Y_1 to the reactive site, wherein~~:


, and


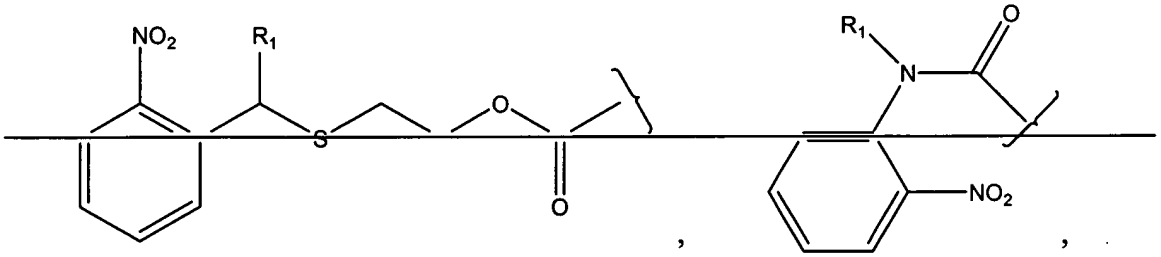
wherein the aromatic ring is optionally substituted with an alkoxy group or a

methylenedioxy group, to the reactive site,

wherein:

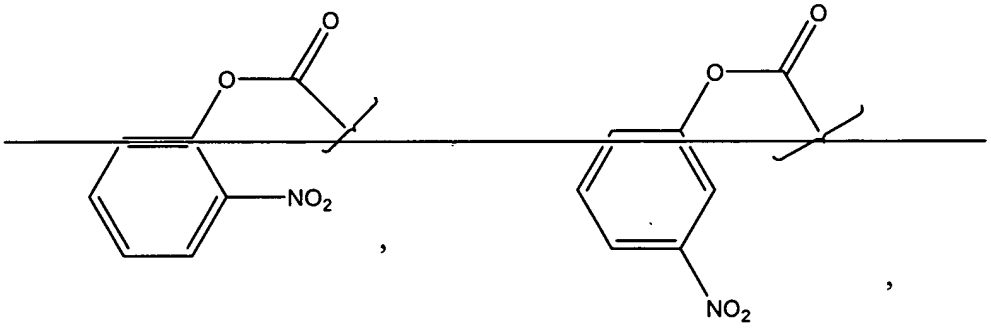
M [[M_1]] is a monomeric building block having a reactive site attached to the carbonyl moiety indicated in the formula ~~that is masked by Y_t; and~~

~~Y_t is a photolabile protecting group selected from the group consisting of:~~



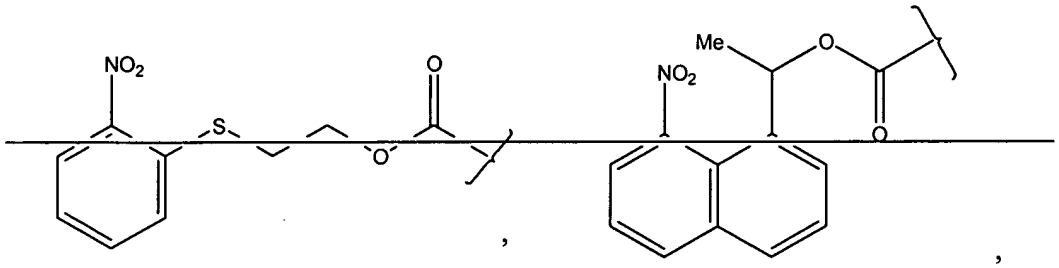
,

,



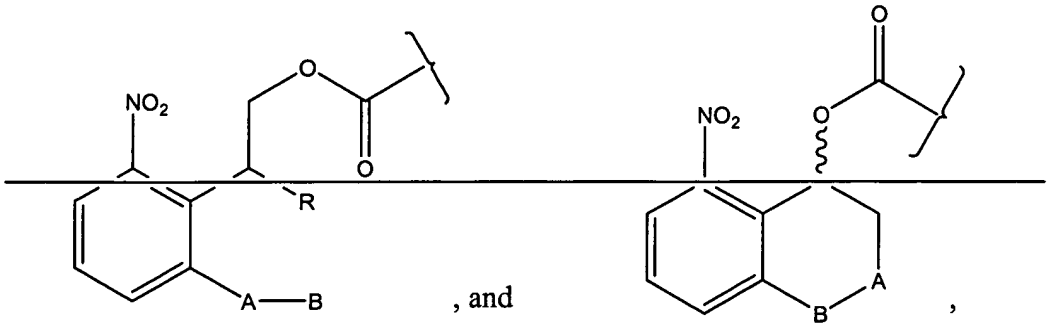
,

,



,

,



, and

,

~~wherein:~~

~~the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;~~

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

B is an aprotic, weakly basic group;

R and R_1 are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group,

and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm; and

(c) cleaving the bond between M and C=O ~~removing Y_t~~ to provide a derivatized support comprising a monomeric building block [[M_1]] with an unmasked reactive site immobilized thereon.

6. (Original) The method of Claim 5, wherein the binding step in (b) is covalent.

7. (Currently Amended) The method of Claim 5, further comprising:

(a) coupling an additional molecule represented by ~~the~~ a formula of step (b) of Claim 5 ~~M_t-Y_t~~ to the unmasked reactive site, wherein ~~Y_t of~~ the additional molecule is ~~selected from the group of photolabile protecting groups listed in Claim 5 and is~~ the same as or different from ~~Y_t of~~ the first molecule~~, and M_t of the additional molecule is a monomeric building block and is the same as or different from M_t of the first molecule~~, to produce a derivatized support having immobilized thereon a chain of the first and the additional molecules; and

(b) cleaving the bond between M and C=O ~~removing Y_t~~ from the additional molecule to provide a derivatized support with a chain of the first and the additional

molecules with an unmasked reactive site immobilized thereon.

8. (Previously Presented) The method of Claim 7, further comprising repeating steps (a) and (b) to provide a chain of molecules immobilized on the support.

9. (Currently Amended) The method of Claim 8, wherein M [[M_1]] for each occurrence is a deoxynucleoside.

10. (Original) The method of Claim 5, wherein the support is a glass or silica substrate.

11. (Currently Amended) The method of Claim 9, wherein the bond between M and C=O is a C-O bond and the O in the C-O bond is located at the 5' position of the deoxynucleoside ~~Y_t of each deoxynucleoside masks a 5' OH~~.

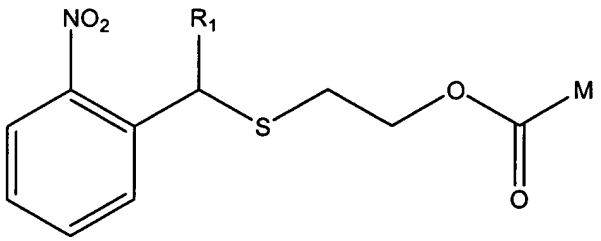
12. (Currently Amended) The method of Claim 7, wherein the bond between M and C=O in ~~Y_t from~~ said second molecules is cleaved ~~removed~~ by irradiation at a wavelength of greater than 350 nm.

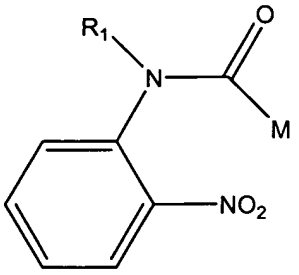
13. (Original) The method of Claim 12, wherein the wavelength is about 365 nm.

14. (Currently Amended) A method of forming, from component molecules ~~represented by the formula M_t-Y_t~~, a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:

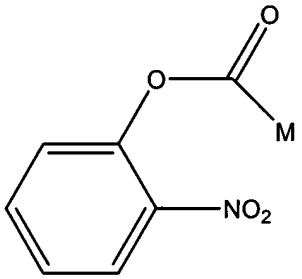
(a) activating a first region of the support;

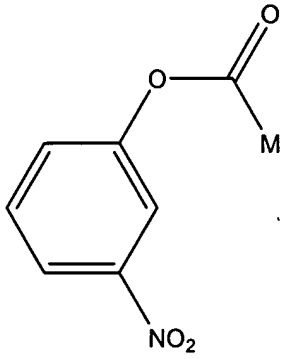
(b) binding a component molecule represented by ~~the~~ a formula selected from the group consisting of:



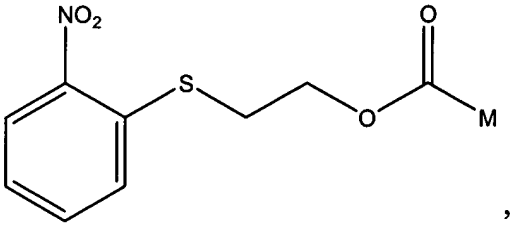
,


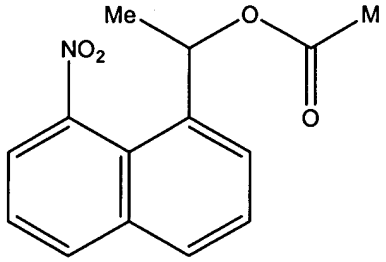
,



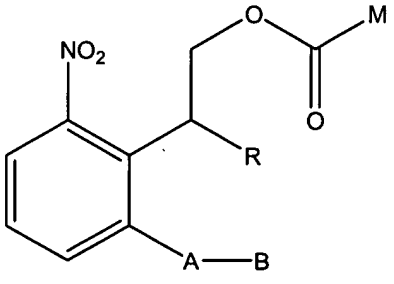
,


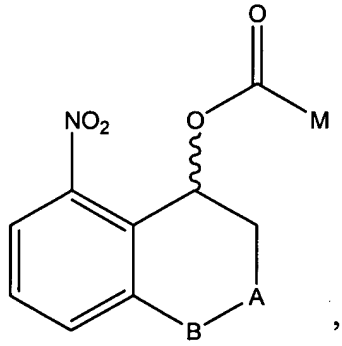
,



,


,



, and


,

wherein the aromatic ring is optionally substituted with an alkoxy group or a

methylenedioxy group, ~~M_t-Y_t~~ to the first region;

(c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by ~~the~~ a formula of step (b) ~~M_t-Y_t~~, wherein [[M_1]] M is the same as or different from M [[M_1]] of step (b) ~~and Y_t is the same as or different from Y_t of step (b)~~;

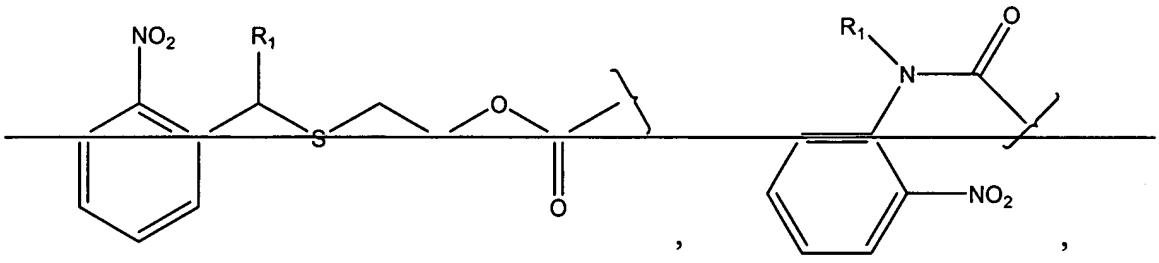
(d) cleaving the bond between M and C=O, wherein M ~~removing Y_t from the M_t that~~ is bound to one or more regions of the support, to provide one or more regions having an unmasked reactive site;

(e) binding an additional molecule represented by ~~the~~ a formula of step (b) ~~M_t-Y_t~~ to the said one or more unmasked reactive sites, wherein [[M_1]] M is the same as or different from M [[M_1]] of steps (b) and (c) ~~and Y_t is the same as or different from Y_t of steps (b) and (c)~~; and

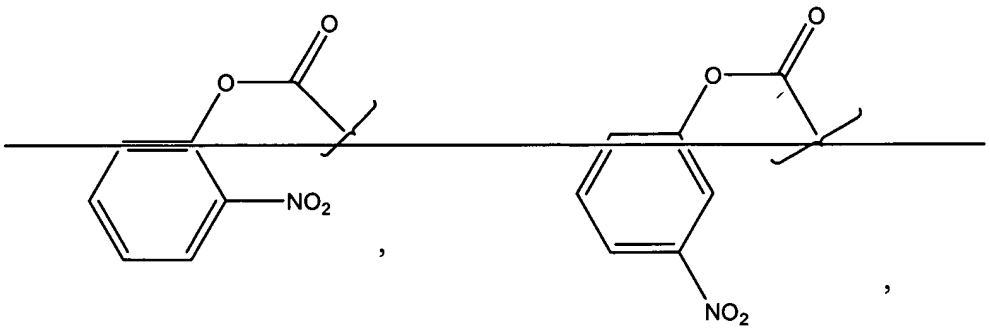
(f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by one or more formulas of step (b) ~~formula M_t-Y_t~~, each compound occupying separate predefined regions of the support;

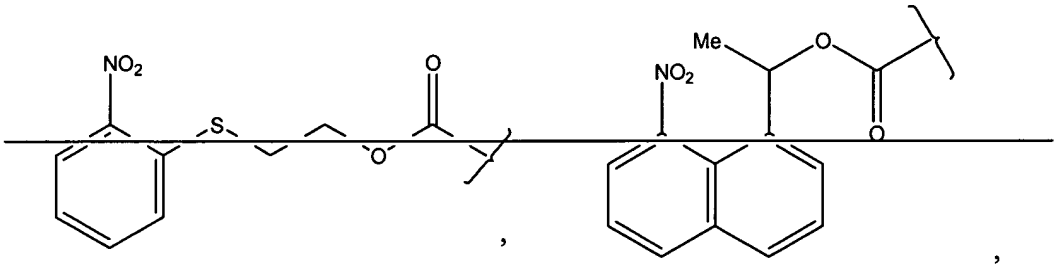
wherein:

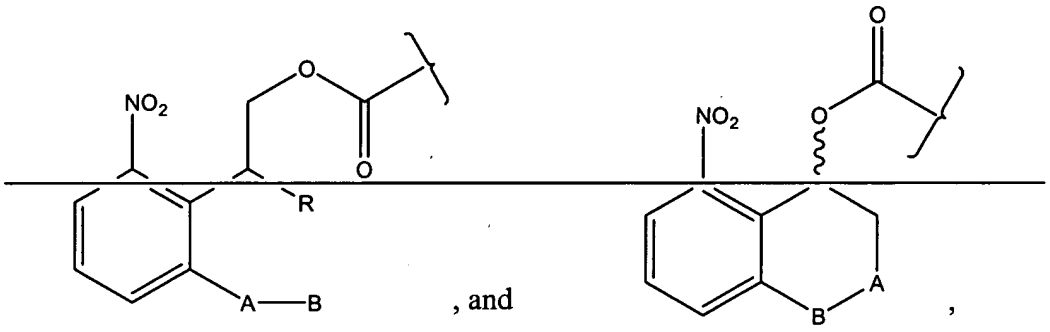
[[M_1]] M is a monomeric building block having a reactive site attached to the carbonyl moiety indicated in the formula ~~that is masked by Y_t; and Y_t is a photolabile protecting group selected from the group consisting of:~~



, ,







~~wherein:~~

~~the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;~~

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

R and R_1 are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alknyl

group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group,

and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm.

15. (Original) The method of Claim 14, wherein the binding steps are covalent.

16. (Currently Amended) The method of Claim 14, wherein [[M_1]] M for each occurrence is a deoxynucleoside.

17. (Original) The method of Claim 14, wherein the support is a glass or silica substrate.

18. (Currently Amended) The method of Claim 16, wherein the bond between M and C=O is a C-O bond and the O in the C-O bond is located at the 5' or 3' position of the deoxynucleoside ~~Y_t of each deoxynucleoside masks a 5'-OH or a 3'-OH~~.

19. (Currently Amended) The method of Claim 14, wherein the bond between M and C=O in ~~Y_t~~ is cleaved ~~removed~~ by irradiation at a wavelength of greater than 350 nm.

20. (Original) The method of Claim 19, wherein the wavelength is about 365 nm.

21. (Previously Presented) The method of Claim 14, wherein the plurality of different compounds bound to the support comprises at least 10^6 different compounds.

22. (Original) The method of Claim 14, wherein each of the regions has an area of between 1 μm^2 and 10,000 μm^2.

23. (Previously Presented) The method of Claim 14, further comprising:

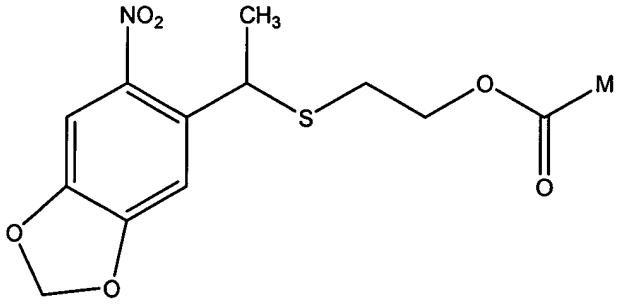
(a) covalently binding a molecule comprising a masked reactive site linked to a chemically labile protecting group to a reactive site, wherein the reactive site is either on an activated region of the support as formed in step (a) of Claim 14 or is an unmasked reactive site on a molecule bound to the support as formed in step (d) of Claim 14;

(b) replacing the chemically labile protecting group with a photolabile protecting group to provide a region of the support having a molecule with the photolabile protecting group; and

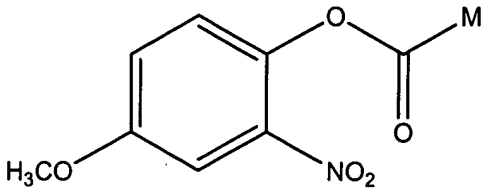
(c) optionally repeating steps (d)-(f) of Claim 14.

24-29. (Canceled)

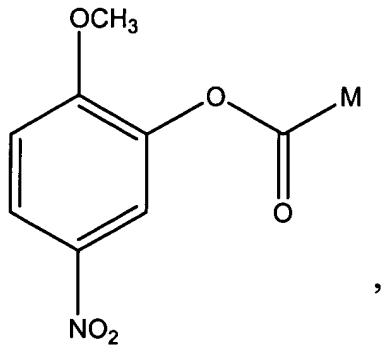
30. (Currently Amended) A compound represented by ~~the~~ a formula ~~M-Y$_t$,~~ selected from the group consisting of:



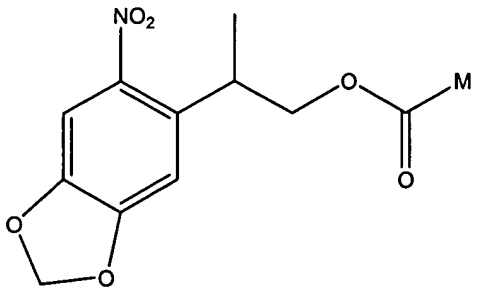
,



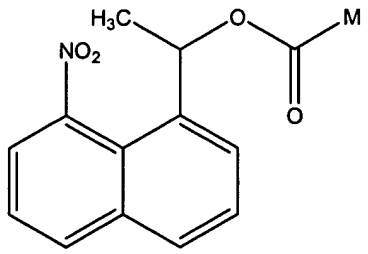
,



,



, and



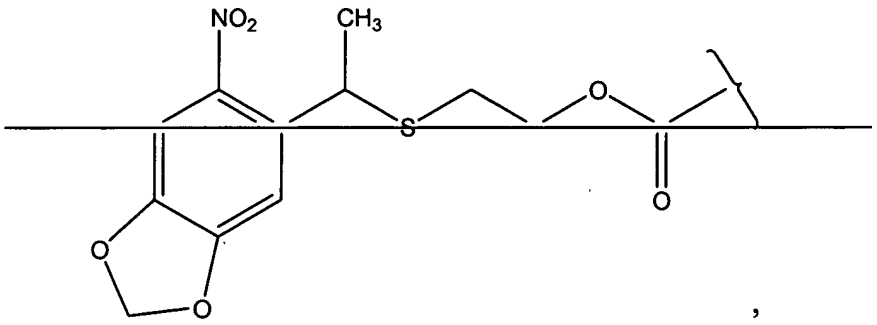
,

wherein:

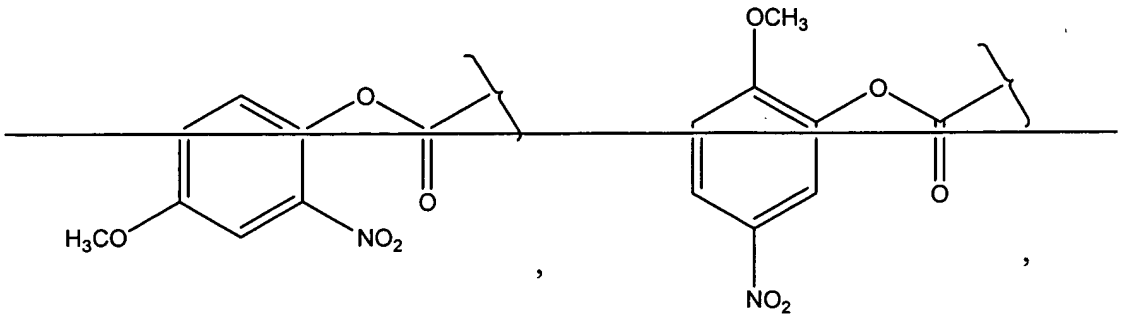
M is a monomeric building block <u>having a reactive site attached to the carbonyl moiety indicated in the formula</u>, a solid surface <u>having a reactive site attached to the carbonyl moiety indicated in the formula</u> or a gel <u>having a reactive site attached to the carbonyl moiety indicated in the formula,</u>

<u>and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm.</u> ~~having a reactive site that is masked by Y_t; and~~

~~Y_t is selected from the group consisting of:~~

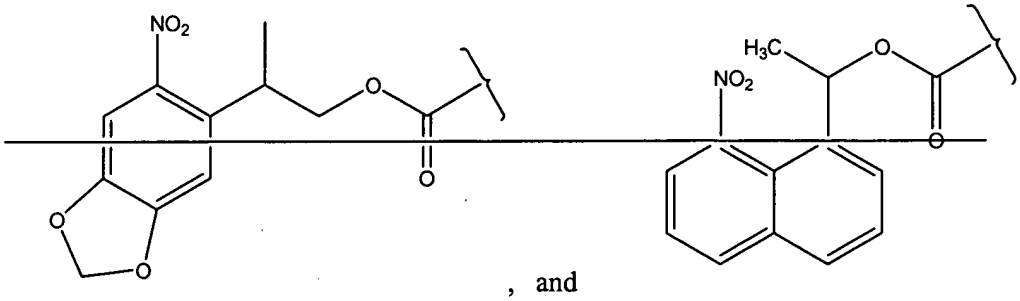


,



,

,



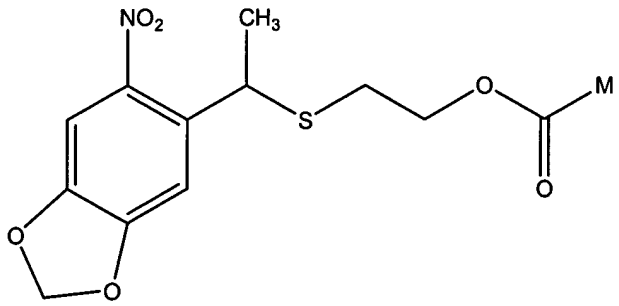
, and .

31. (Previously Presented) The compound of Claim 30, wherein M is a nucleoside β-cyanoethyl phosphoramidite.

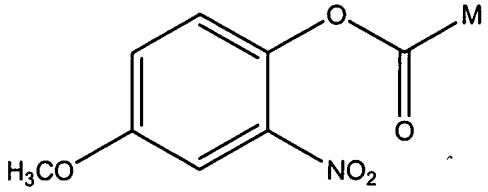
32. (Currently Amended) A method of attaching a molecule ~~with a reactive site~~ to a support comprising the steps of:

(a) providing a support with a reactive site;

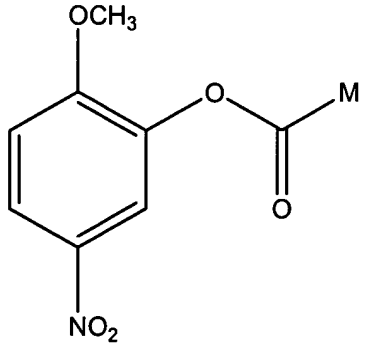
(b) binding a first molecule represented by a ~~the~~ formula ~~M_1-Y_1~~ selected from the group consisting of:



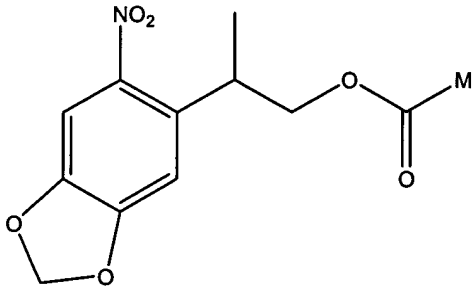
,



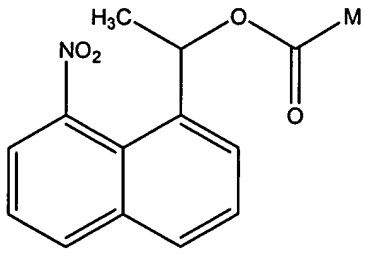
,



,



, and

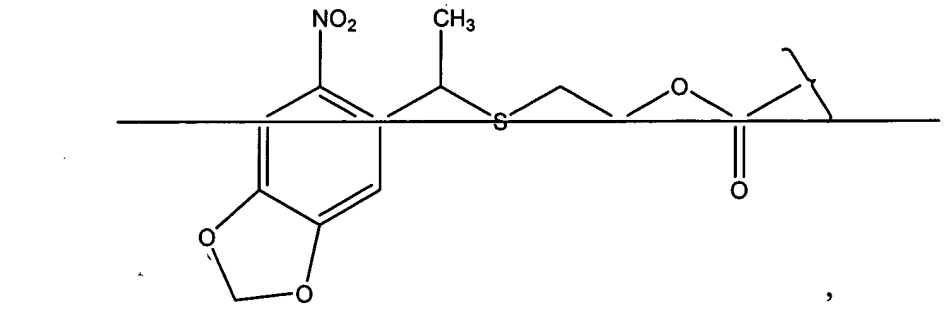


,

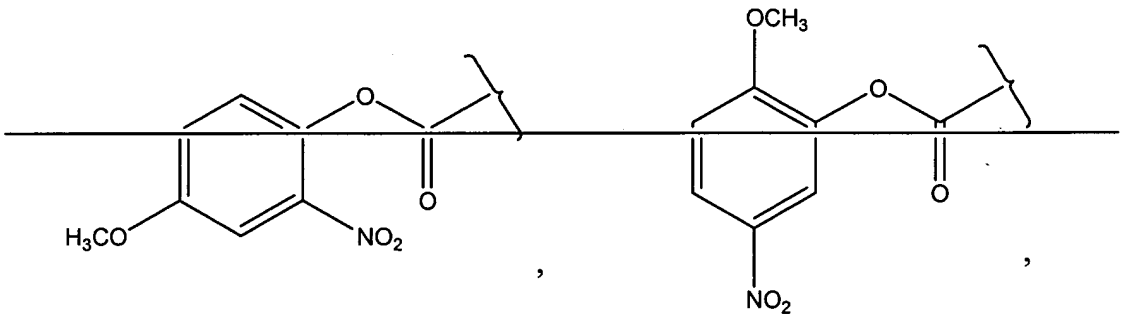
to the reactive site, wherein:

M [[M_1]] is a monomeric building block having a reactive site attached to the carbonyl group indicated in the formula, and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm; ~~that is masked by Y_t; and~~

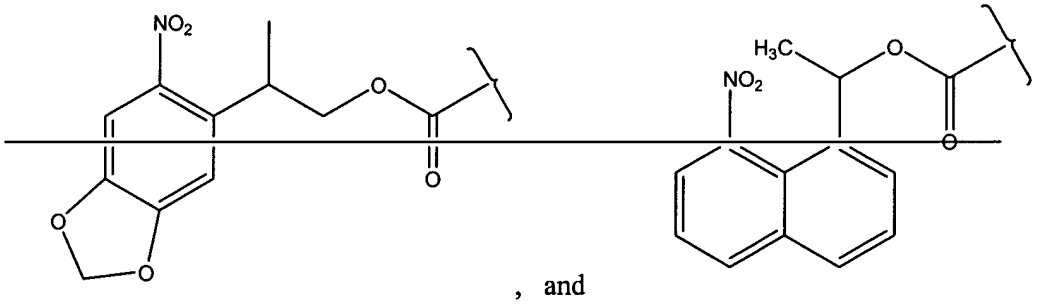
~~Y_t is a photolabile protecting group selected from the group consisting of:~~



,



, ,



, and

;

(c) cleaving the bond between M and C=O ~~removing Y_t~~ to provide a derivatized support comprising [[M_1]] M with an unmasked reactive site immobilized thereon;

(d) coupling an additional molecule represented by a ~~the~~ formula of step (b) ~~M_t-Y_t~~ to the unmasked reactive site, wherein ~~Y_t and M_t of~~ the additional molecule is ~~are~~ selected independent of the first molecule, to produce a derivatized support having immobilized thereon a chain of the first and the additional molecules;

(e) cleaving the bond between M and C=O in ~~removing Y_t from~~ the additional molecule to provide a derivatized support with a chain of the first and the

additional molecules with a second unmasked reactive site immobilized thereon; and

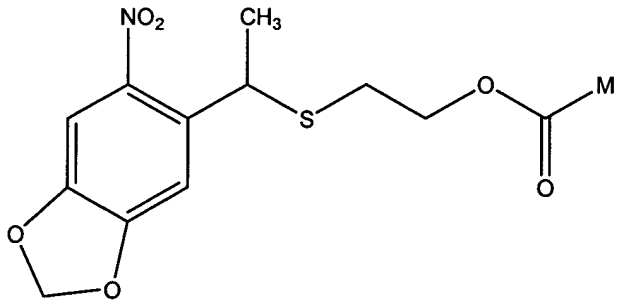
(f) repeating steps (d) and (e) with a succession of molecules, to provide a chain of molecules immobilized on the support.

33. (Currently Amended) The method of Claim 32, wherein [[M_1]] M for each occurrence is a nucleoside β-cyanoethyl phosphoramidite.

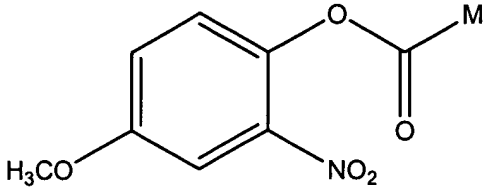
34. (Currently Amended) A method of forming, from component molecules ~~represented by the formula M_t-Y_t~~, a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:

(a) activating a first region of the support;

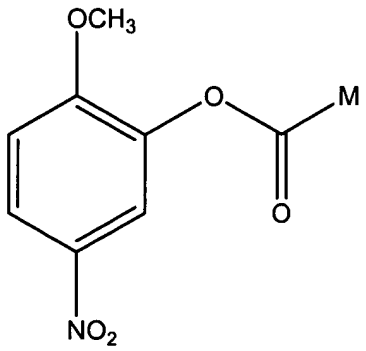
(b) binding a molecule represented by ~~the~~ a formula ~~M_t-Y_t~~ from the group consisting of:



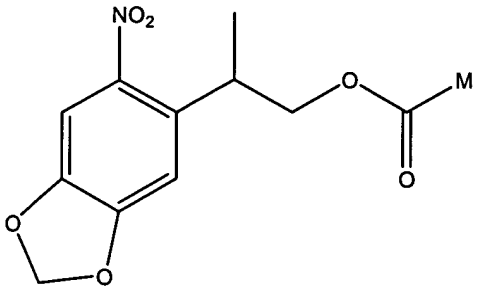
,

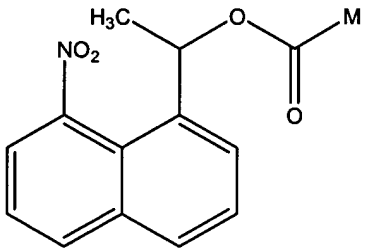


,



,





, and

,

to the first region;

(c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by a ~~the~~ formula of step (b) ~~M_t-Y_t~~, wherein [[M_1]] M is the same as or different from [[M_1]] M of step (b) ~~and Y_t is the same as or different from Y_t of step (b)~~;

(d) cleaving the bond between M and C=O in the monomeric building block ~~removing Y_t from the M_t~~ that is bound to one or more regions of the support to provide one or more regions having an unmasked reactive site;

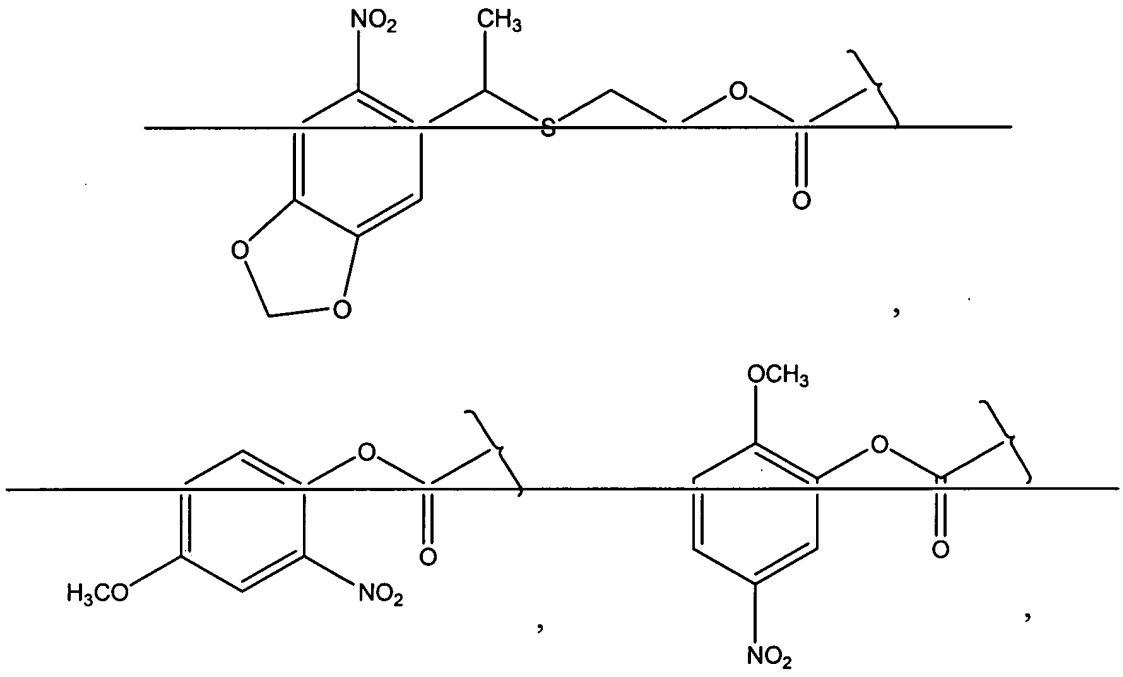
(e) binding an additional molecule represented by ~~the~~ a formula of step (b) [[M_1-Y_1]] to the said one or more unmasked reactive sites, wherein M [[M_1]] is the same as or different from M [[M_1]] of steps (b) and (c) ~~and Y_t is the same as or different from Y_t of steps (b) and (c)~~; and

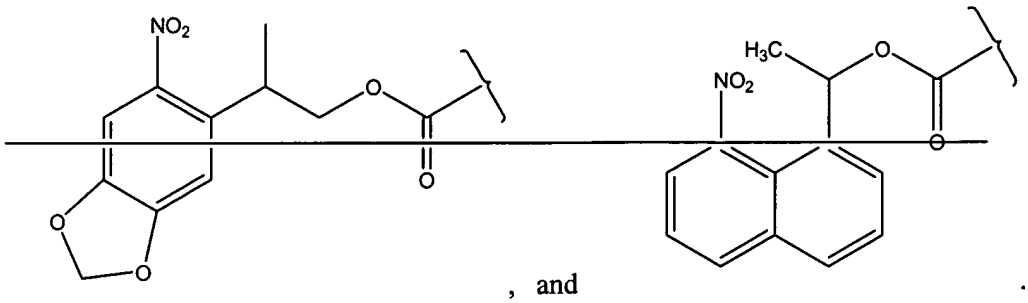
(f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by a formula of step (b) ~~M_t-Y_t~~, each compound occupying separate predefined regions of the support;

wherein:

M [[M_1]] is a monomeric building block having a reactive site attached to the carbonyl moiety indicated in the formula, and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm ~~that is masked by Y_t; and~~

~~Y_t is a photolabile protecting group selected from the group consisting of:~~

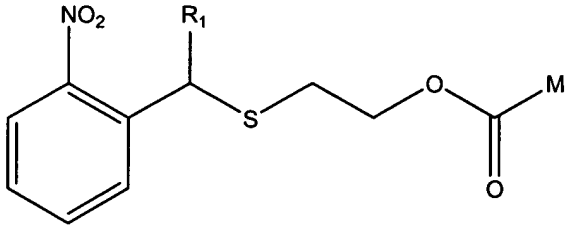




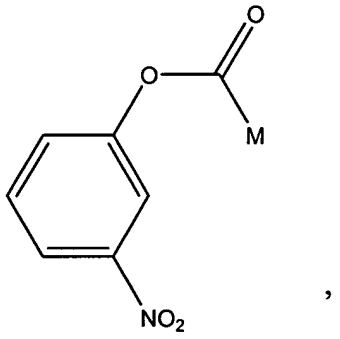
, and .

35. (Currently Amended) The method of Claim 34, wherein M [[M_1]] for each occurrence is a nucleoside β-cyanoethyl phosphoramidite.

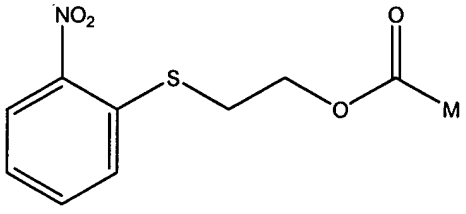
36. (Currently Amended) A compound represented by a ~~the~~ formula ~~M-Y,~~ selected from the group consisting of:



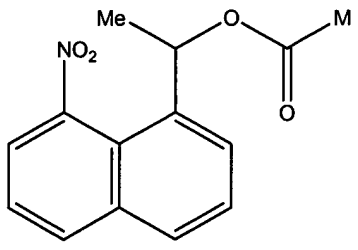
,



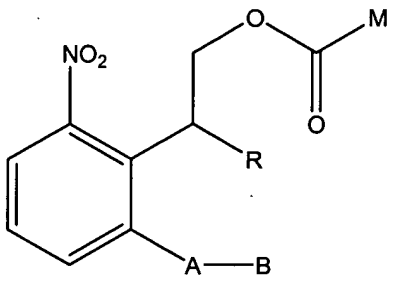
,



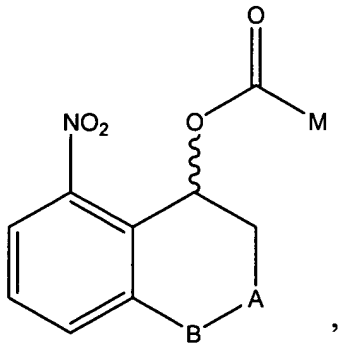
,



,



, and



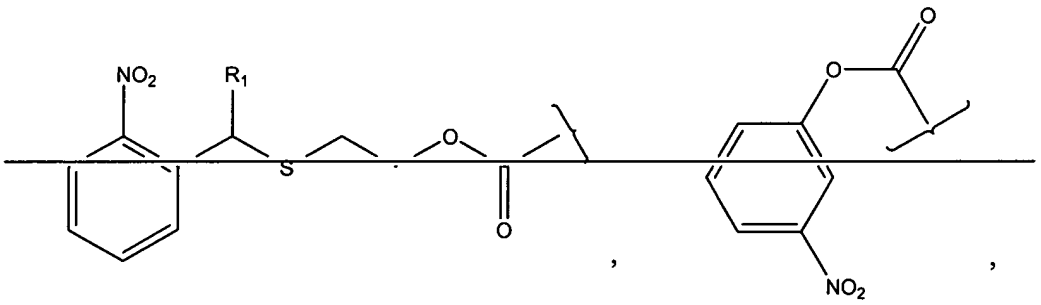
,

wherein the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group,

wherein:

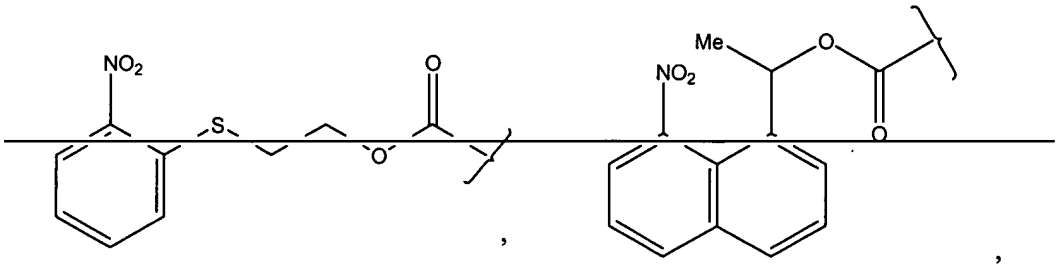
M is selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, ~~all having a reactive site that is masked by Y~~; ~~and~~

~~Y is a photolabile protecting group selected from the group consisting of:~~



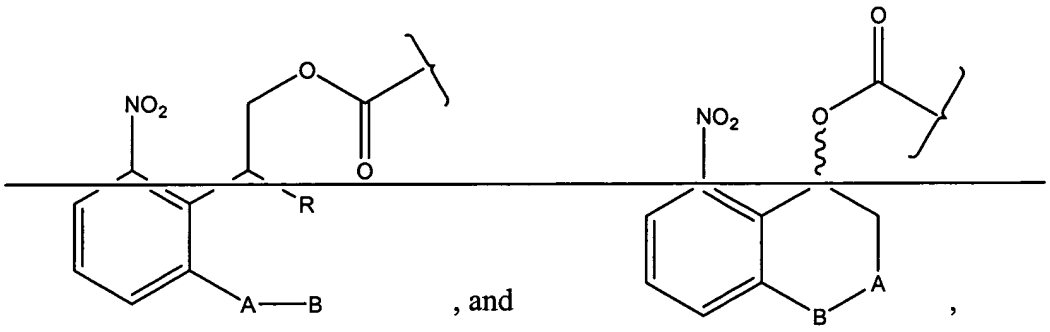
,

,



,

,



, and ,

~~wherein:~~

~~the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;~~

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

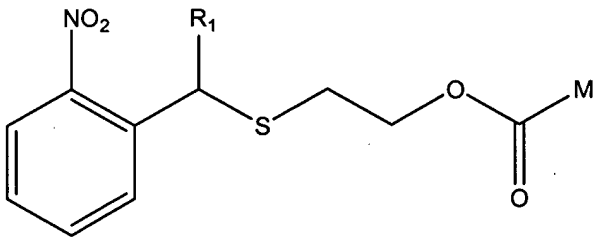
B is an aprotic, weakly basic group; and

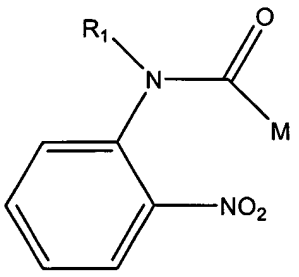
R and R_1 are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group, and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm.

37. (Currently Amended) A method of attaching a molecule with a reactive site to a support comprising the steps of:

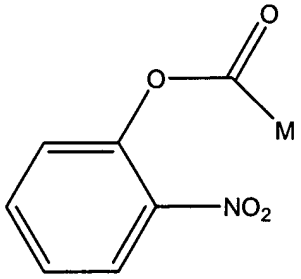
(a) providing a support with a reactive site;

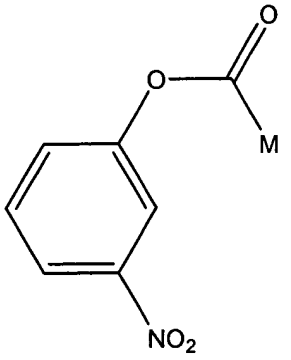
(b) binding a first molecule represented by a ~~the~~ formula ~~M_1-Y_1~~ selected from the group consisting of:



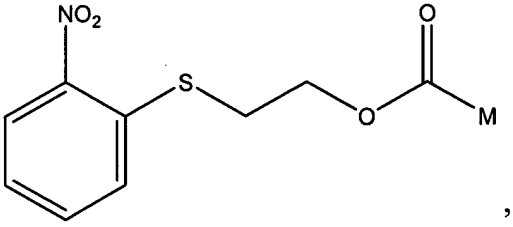
,


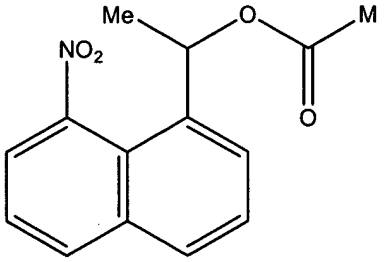
,



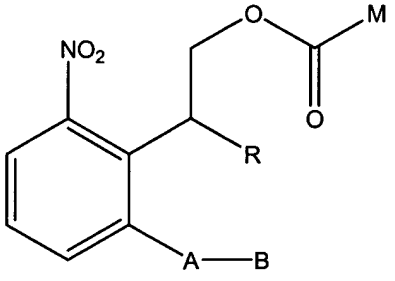
,


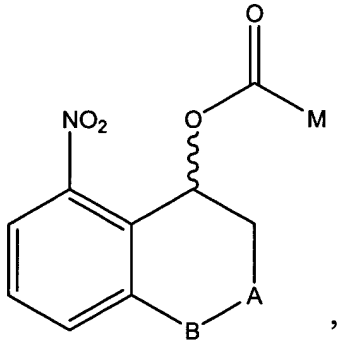
,



,


,



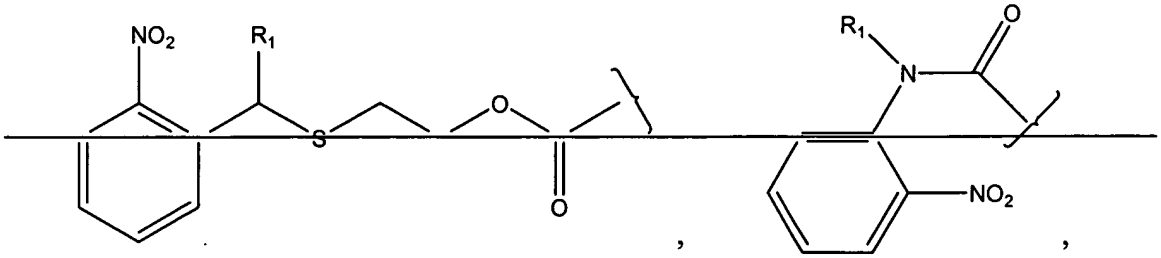
, and


,

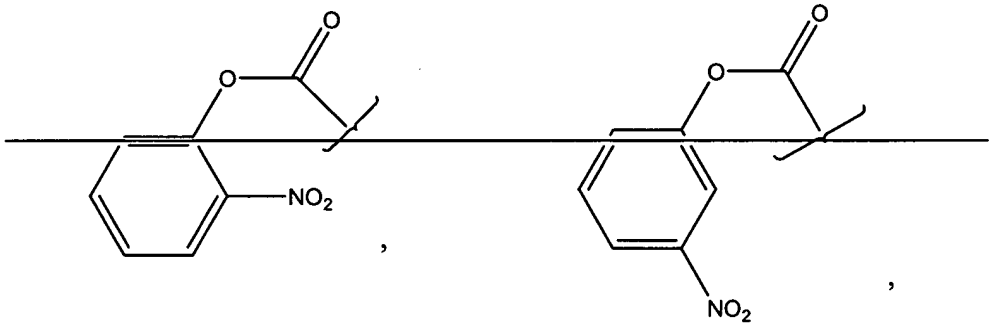
wherein the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group, to the reactive site, wherein:

M [[M_1]] is a monomeric building block selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, all having a reactive site attached to the carbonyl moiety indicated in the formula ~~that is masked by Y_t; and~~

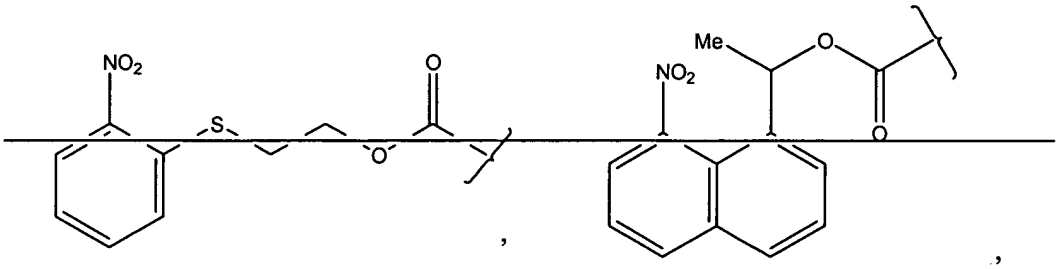
~~Y_t is a photolabile protecting group selected from the group consisting of:~~



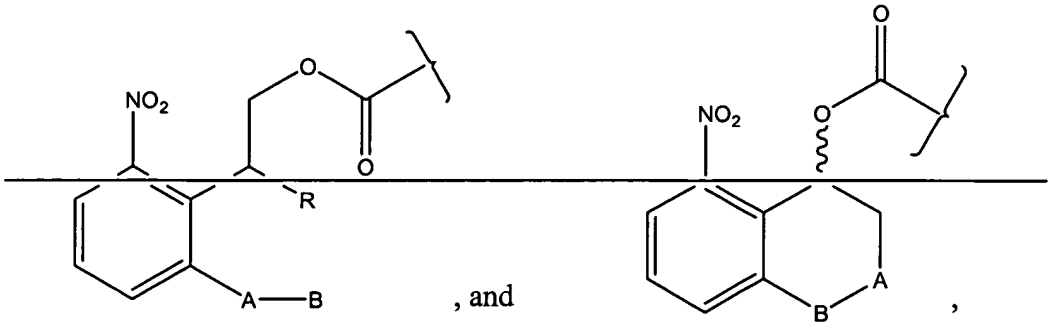
,



,



,



, and ,

~~wherein:~~

~~the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;~~

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

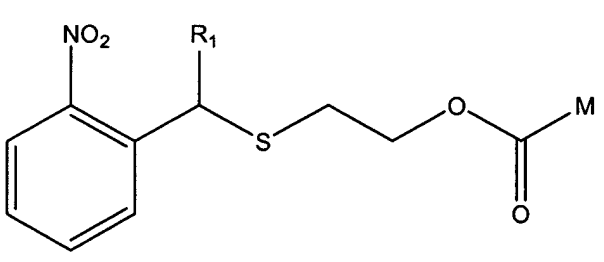
R and R_1 are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alkynyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group, and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm; and

(c) cleaving the bond between M and C=O ~~removing Y_t~~ to provide a derivatized support comprising a monomeric building block [[M_1]] with an unmasked reactive site immobilized thereon.

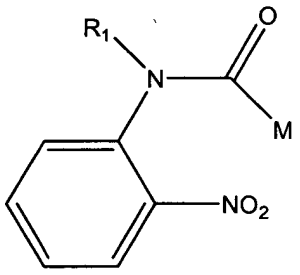
38. (Currently Amended) A method of forming, from component molecules ~~represented by the formula M_t-Y_t~~, a plurality of compounds bound to a support, each compound occupying a separate predefined region of the support, said method comprising the steps of:

(a) activating a first region of the support;

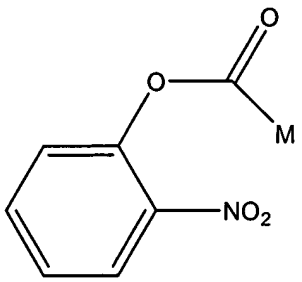
(b) binding a molecule represented by ~~the~~ a formula ~~M_t-Y_t~~ selected from the group consisting of:



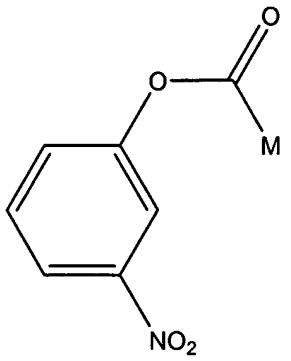
,



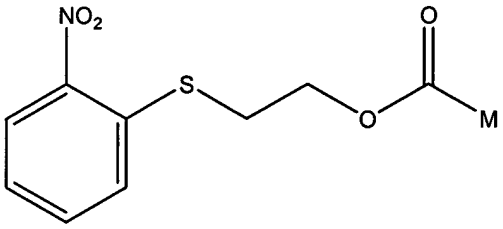
,



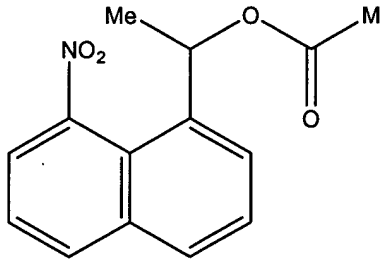
,



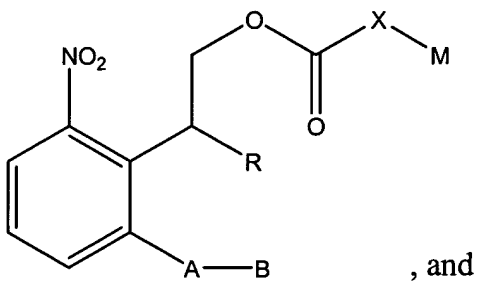
,



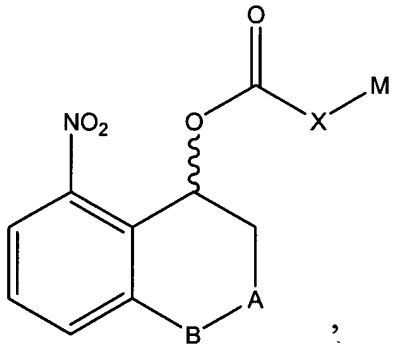
,



,



, and



,

wherein the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group, to the first region;

(c) repeating steps (a) and (b) on other regions of the support whereby each of said other regions has bound thereto a molecule represented by ~~the~~ a formula of step (b) ~~M_1-Y_1~~, wherein M [[M_1]] is the same as or different from M [[M_1]] of step (b) ~~and Y_1 is the same as or different from Y_1 of step (b)~~;

(d) cleaving the bond between M and C=O in the monomeric building block ~~removing Y_t from the M_t~~ that is bound to one or more regions of the support to provide one or more regions having an unmasked reactive site;

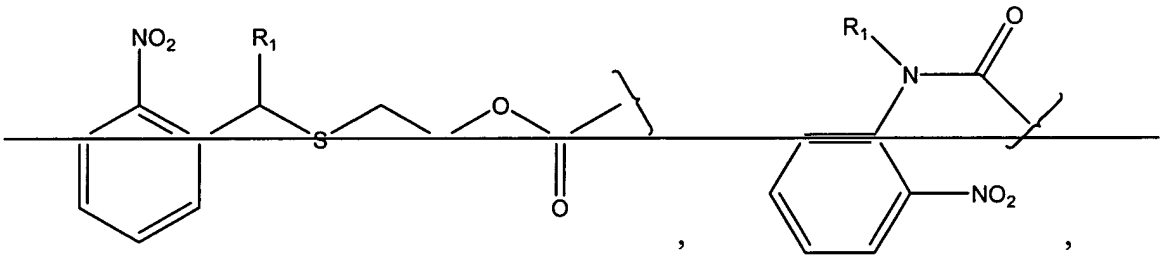
(e) binding an additional molecule represented by ~~the~~ a formula of step (b) ~~M_t-Y_t~~ to the said one or more unmasked reactive sites, wherein M [[M_1]] is the same as or different from M [[M_1]] of steps (b) and (c) ~~and Y_t is the same as or different from Y_t of steps (b) and (c)~~; and

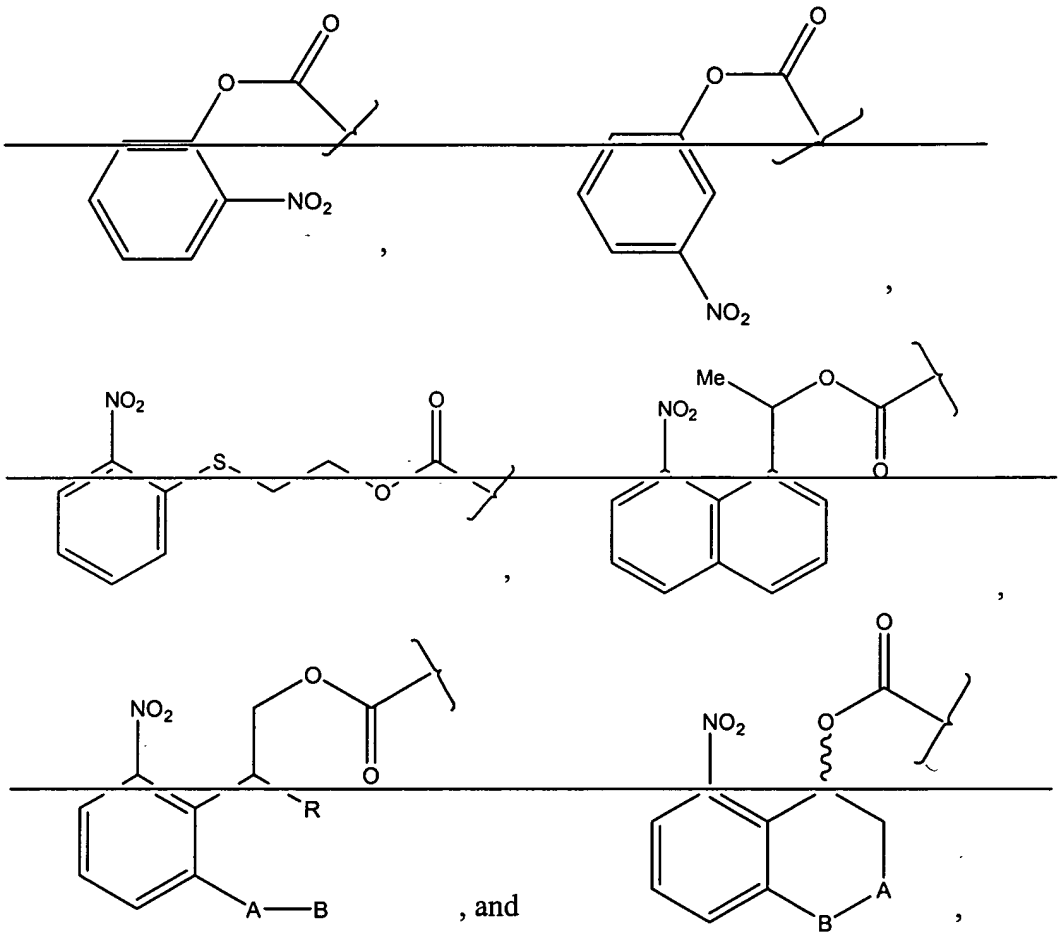
(f) repeating steps (d) and (e) on regions of the support until a desired plurality of compounds is formed from the component molecules represented by a formula of step (b) ~~M_t-Y_t~~, each compound occupying separate predefined regions of the support;

wherein:

M [[M_1]] is a monomeric building block selected from the group consisting of nucleic acids, nucleosides and analogs thereof, nucleotides and analogs thereof, and monosaccharides, all having a reactive site attached to the carbonyl group indicated in the formula; ~~that is masked by Y_t; and~~

~~Y_t is a photolabile protecting group selected from the group consisting of:~~





~~wherein:~~

~~the aromatic ring is optionally substituted with an alkoxy group or a methylenedioxy group;~~

A is O, S, N-alkyl, N-aryl or $(CH_2)_n$;

n is 1 to about 3;

B is an aprotic, weakly basic group; and

R and R_1 are each, independently, -H, an optionally substituted alkyl group, an optionally substituted alkenyl group, an optionally substituted alknyl group, an optionally substituted aryl group, or an optionally substituted heteroaromatic group.

and wherein the bond between M and C=O is capable of being cleaved by photolysis using light having a wavelength of about 365 nm.